

RAPID PROTOTYPING WITH UNITY

BY MAHRUKH TAUSEEF

Ph.D. Student,
Electrical & Computer
Engineering

More than 5 years
experience with Unity

All about using tech
for creative problem-
solving

Likes:
Cats, my friends
Dislikes:
Mint Chocolate Chip

What's on your mind today?

Ask anything



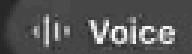
Attach



Search



Reason



Voice



Summarize text



Code



Analyze data



Surprise me

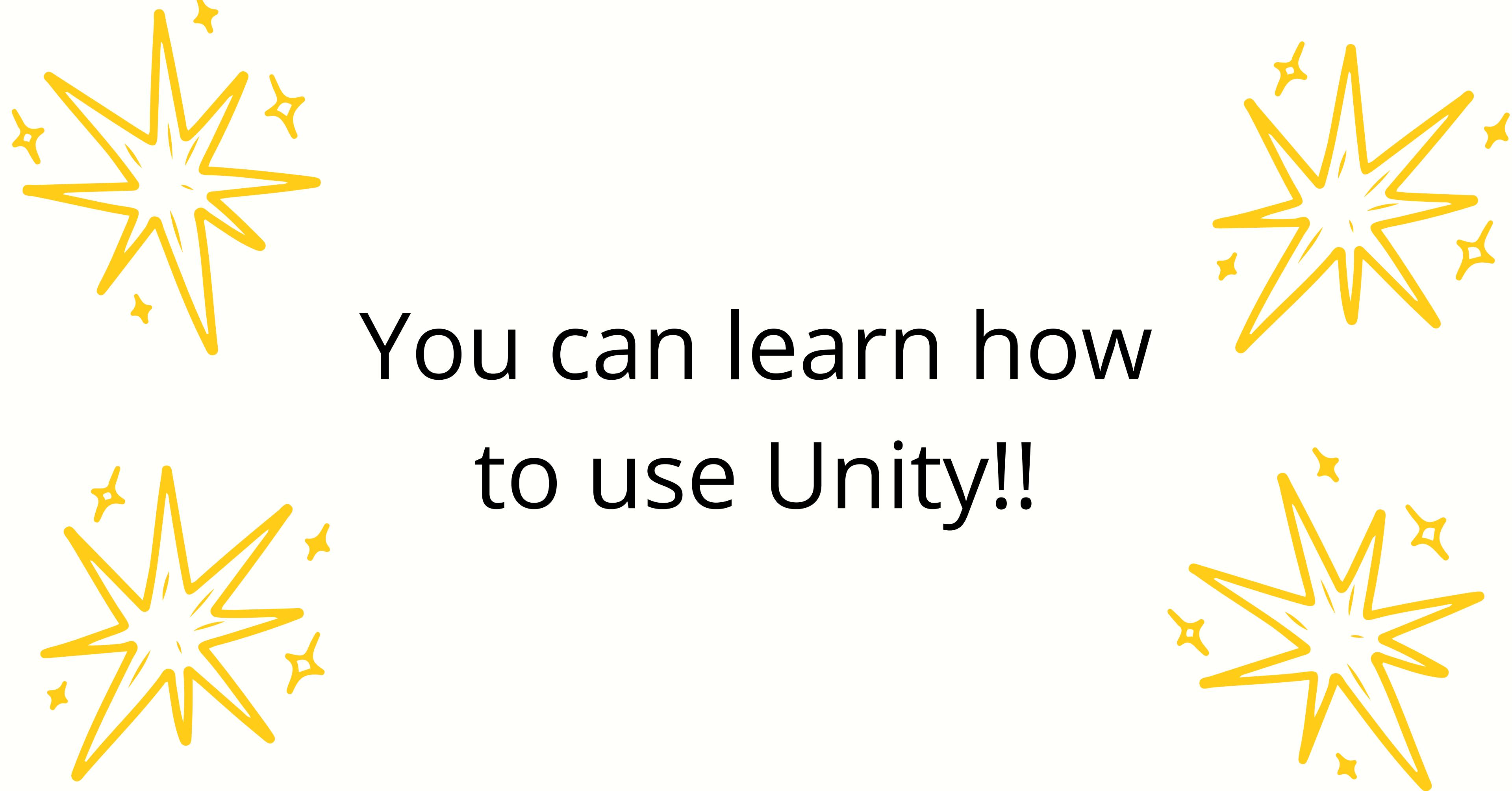


Get advice



More





You can learn how
to use Unity!!

Show you how to turn an idea into a product ready for testing

Tell you enough so that you can follow through

Add links to great videos for you to learn from!

Leave you with a starter kit: this demo

What is something LIVE cares about?

Learning, duh!

What is a good problem to solve in this domain?

I read a book that said many english speaking adults in the U.S. sometimes have trouble spelling in English.

A quick look showed it mostly starts from not learning to spell as a kid. But why?

English is not an easy language, am I rite?

Learning to spell can be demotivating

Maybe, I can make it fun and engaging!



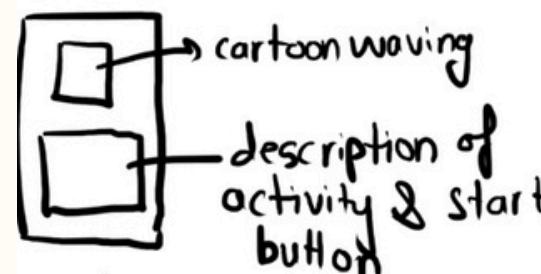
I WILL CREATE AN
APP USING UNITY!

Spelling Plan

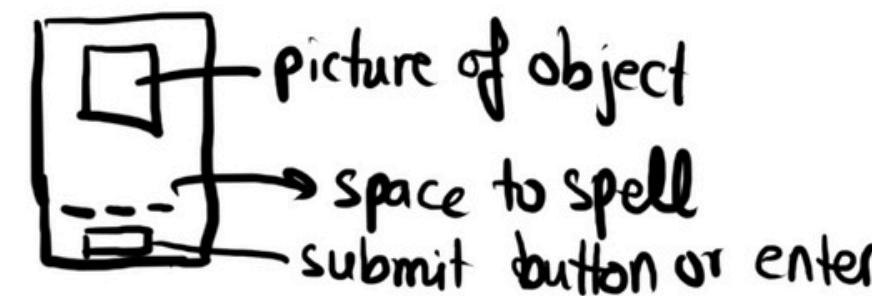
Menu :



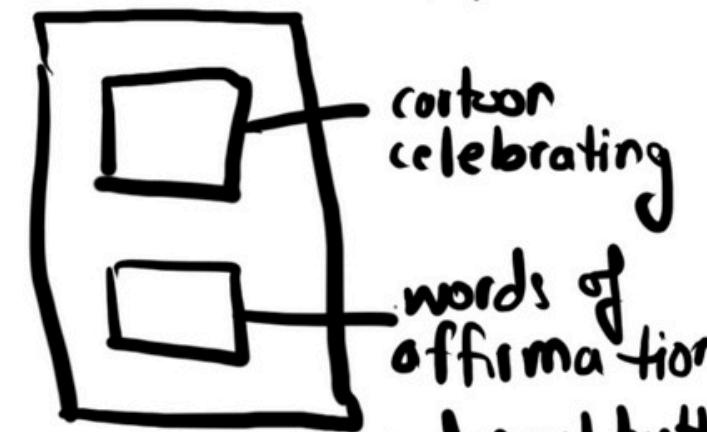
✓ Grade 1 clicked (or 2 or 3)



↓ when start button pressed

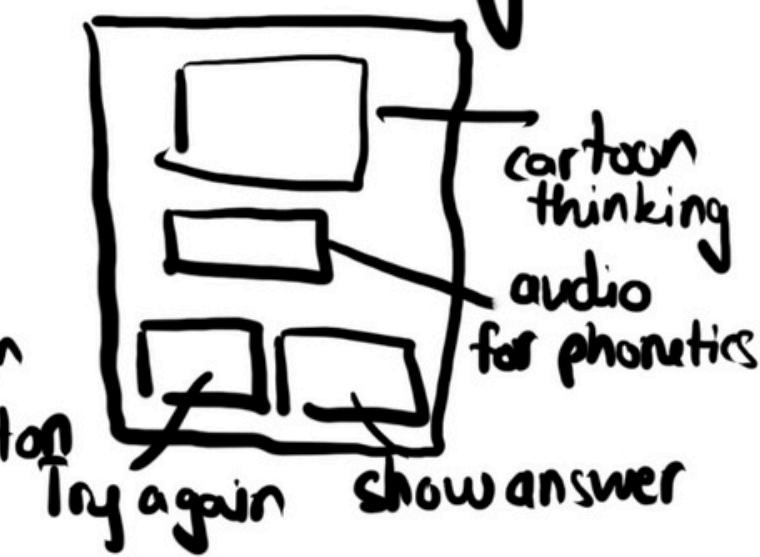


if correct



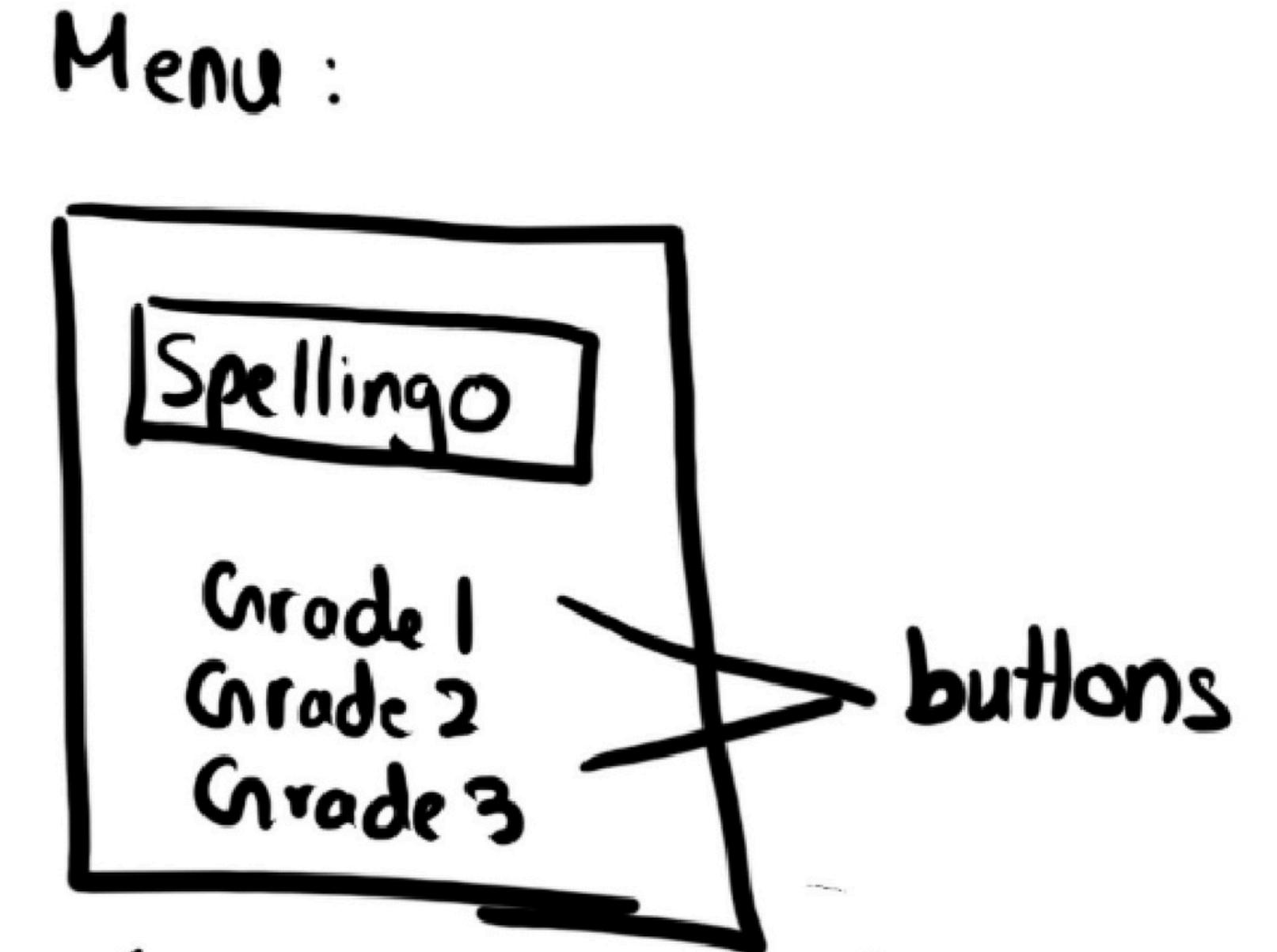
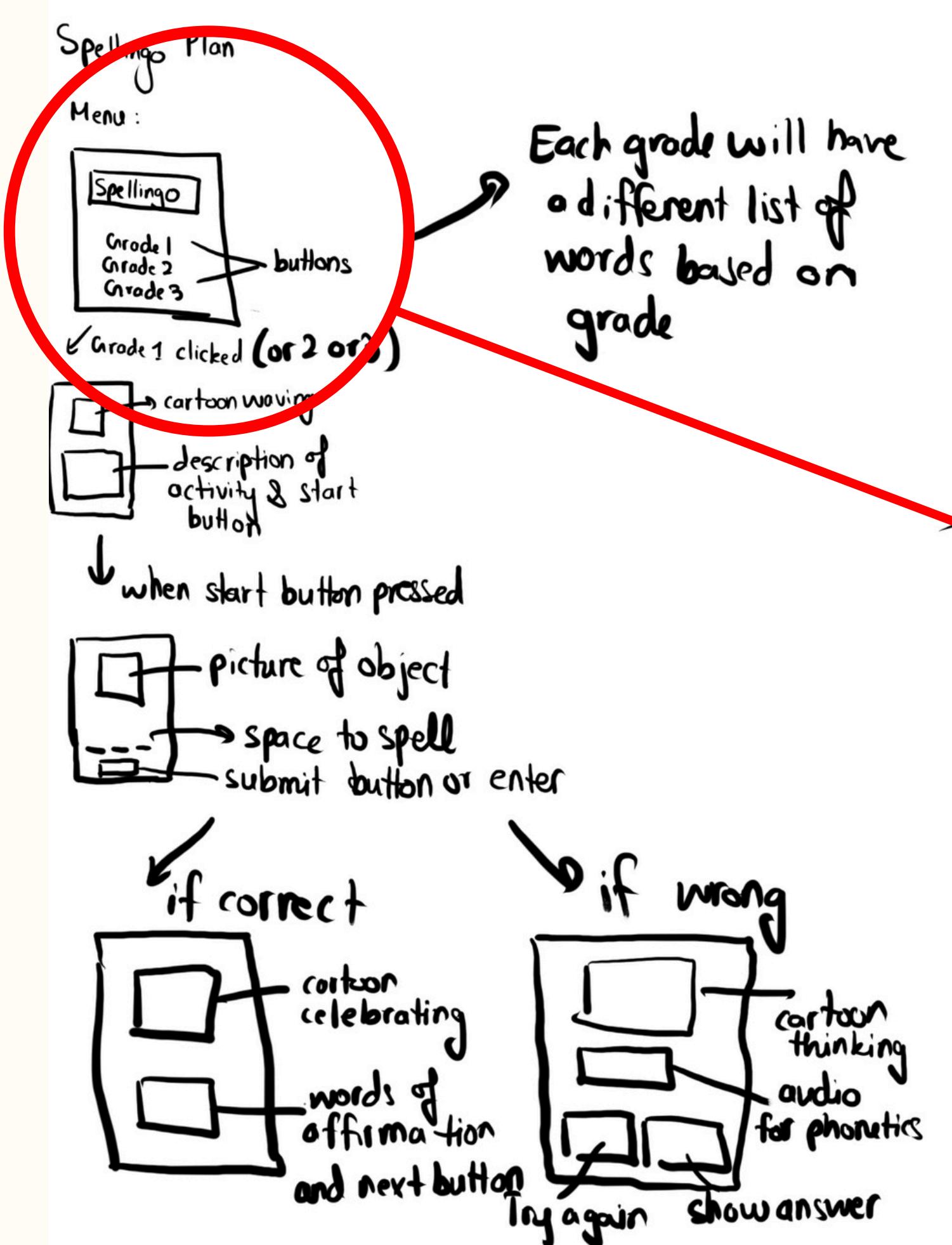
words of
affirmation
and next button

if wrong



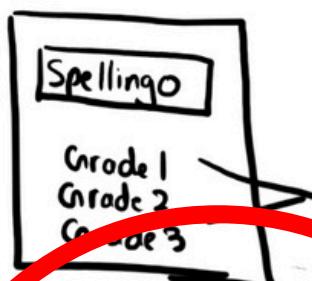
try again show answer

Each grade will have
a different list of
words based on
grade



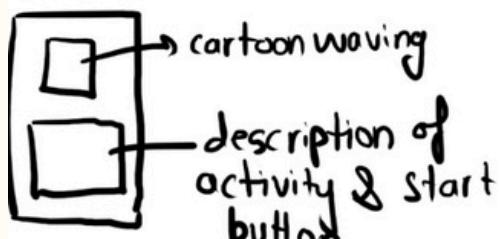
Spelling Plan

Menu :



buttons

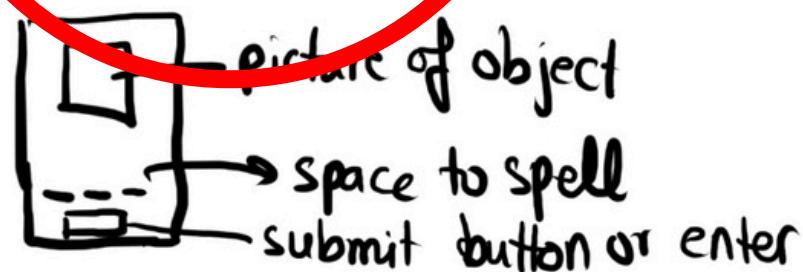
✓ Grade 1 clicked (or 2 or 3)



cartoon waving

description of activity & start button

when start button pressed

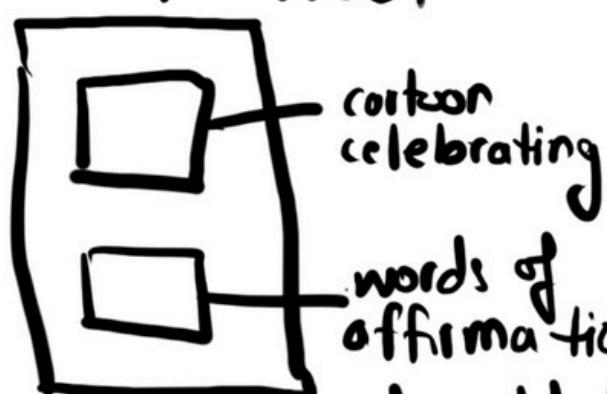


picture of object

space to spell

submit button or enter

if correct



cartoon celebrating

words of affirmation and next button

if wrong

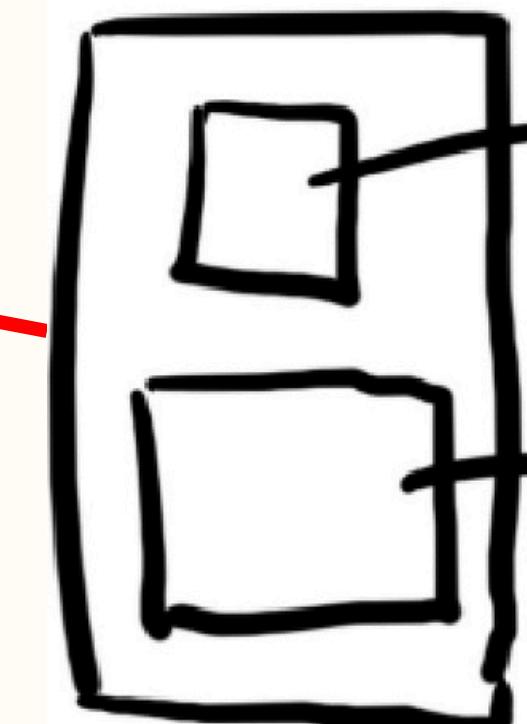


cartoon thinking

audio for phonetics

Each grade will have a different list of words based on grade

✓ Grade 1 clicked (or 2 or 3)

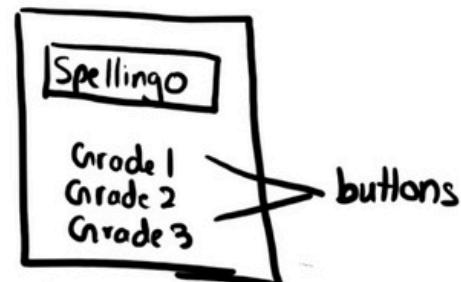


cartoon waving

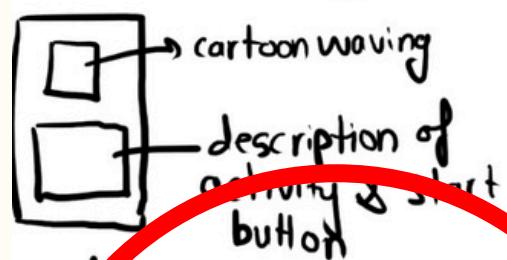
description of activity & start button

Spellingo Plan

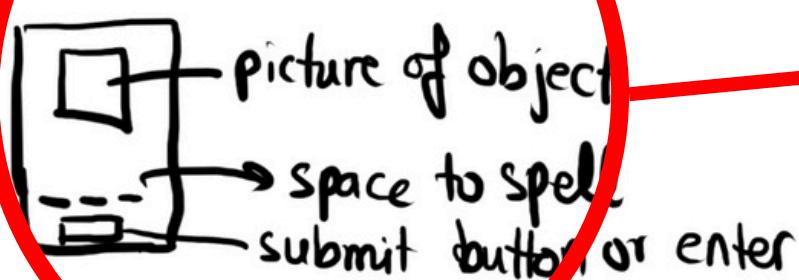
Menu :



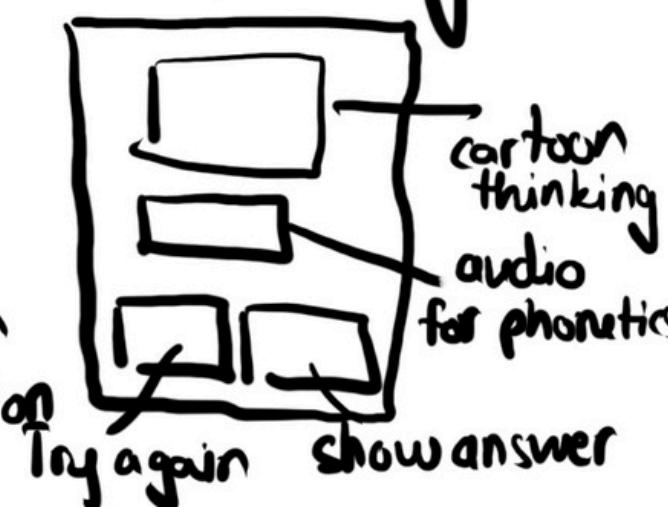
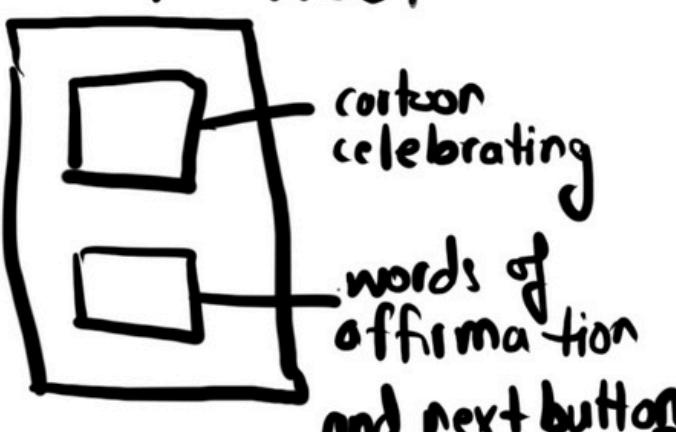
✓ Grade 1 clicked (or 2 or 3)



↓ when start button pressed

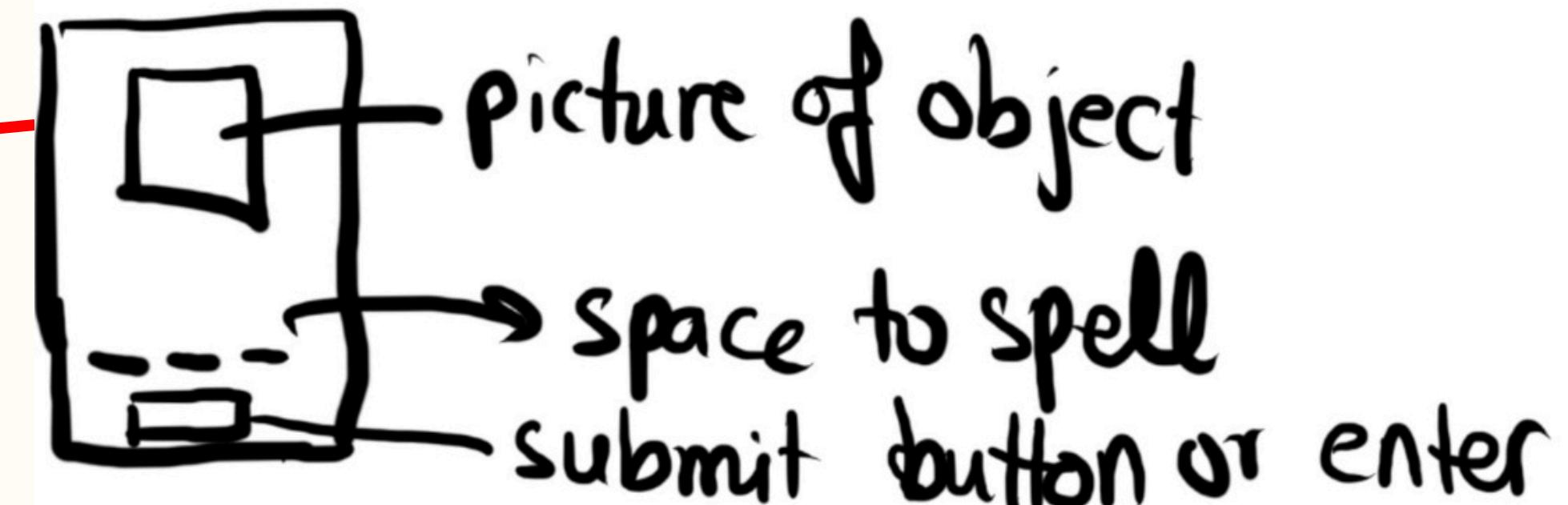


if correct



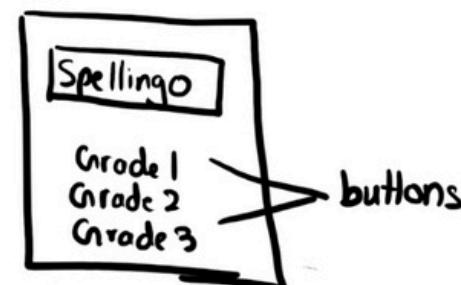
Each grade will have
a different list of
words based on
grade

↓ when start button pressed

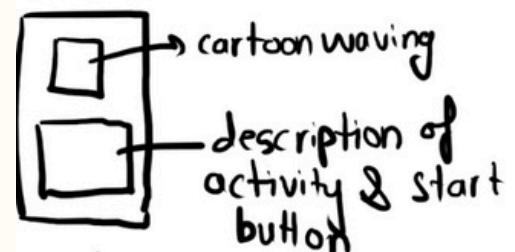


Spellingo Plan

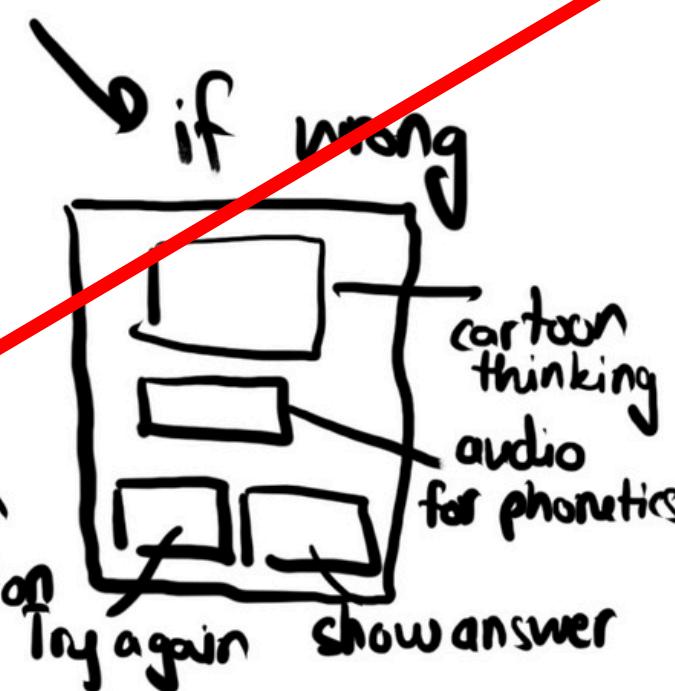
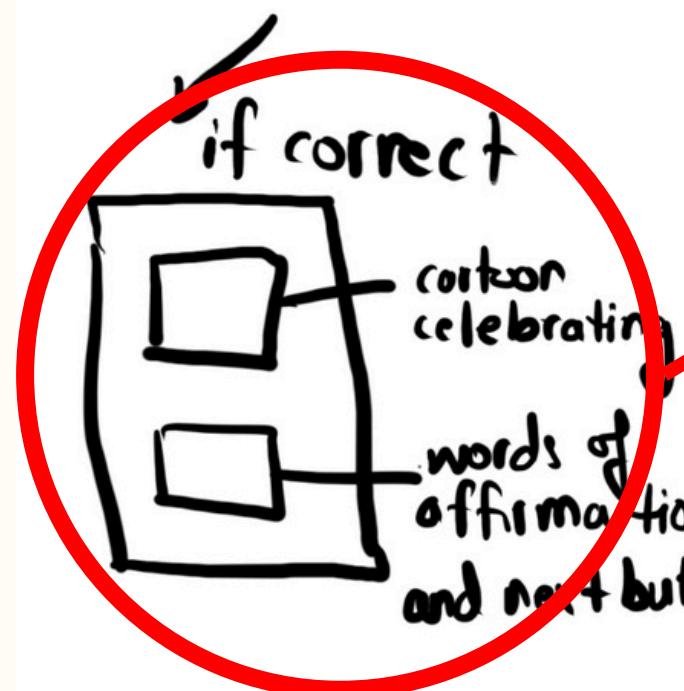
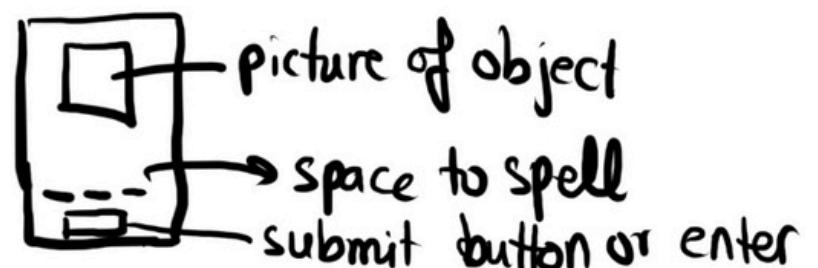
Menu :



✓ Grade 1 clicked (or 2 or 3)



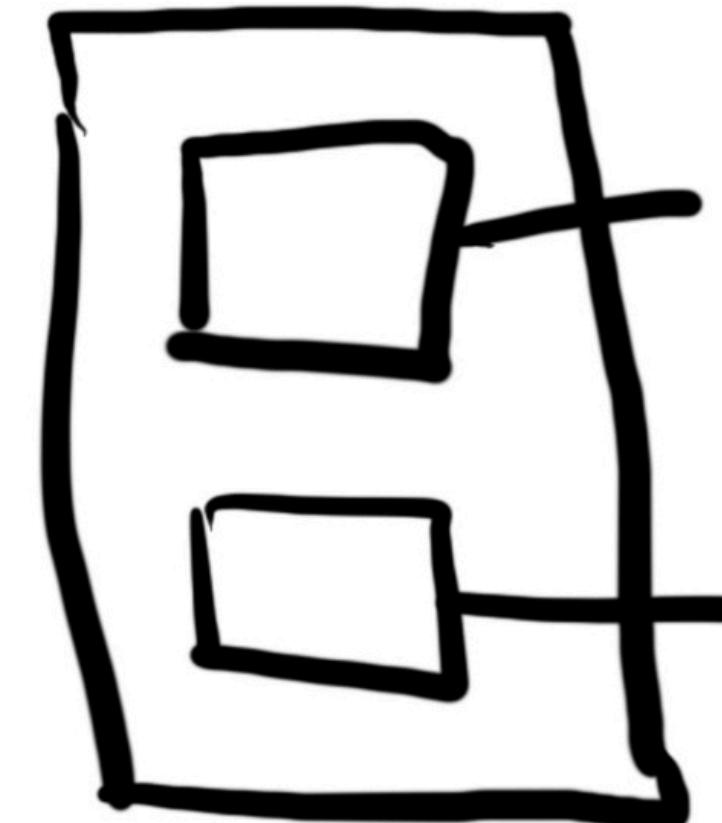
↓ when start button pressed



Each grade will have a different list of words based on grade



if correct



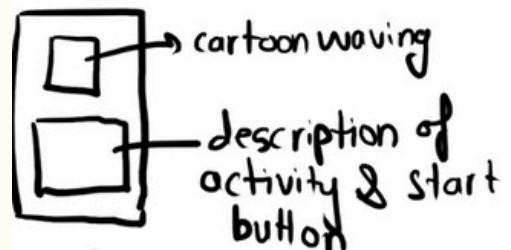
if correct
cartoon celebrating
words of affirmation and next button

Spelling Plan

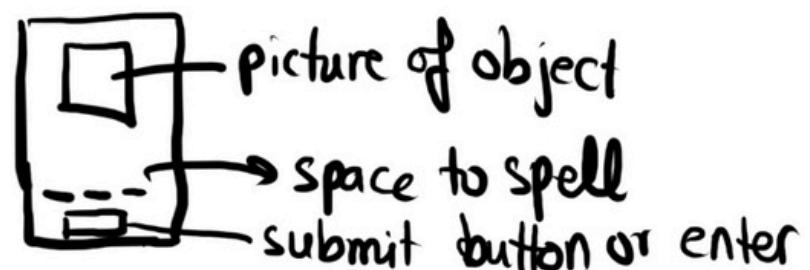
Menu :



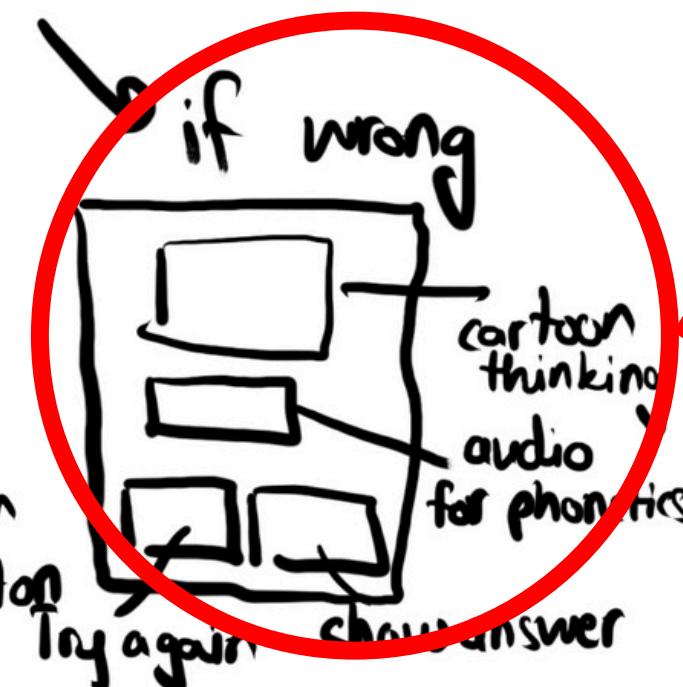
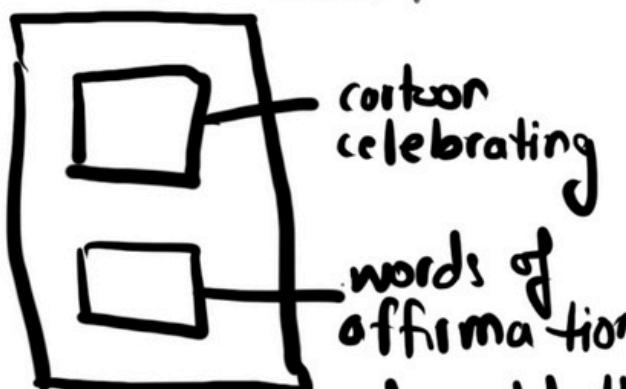
✓ Grade 1 clicked (or 2 or 3)



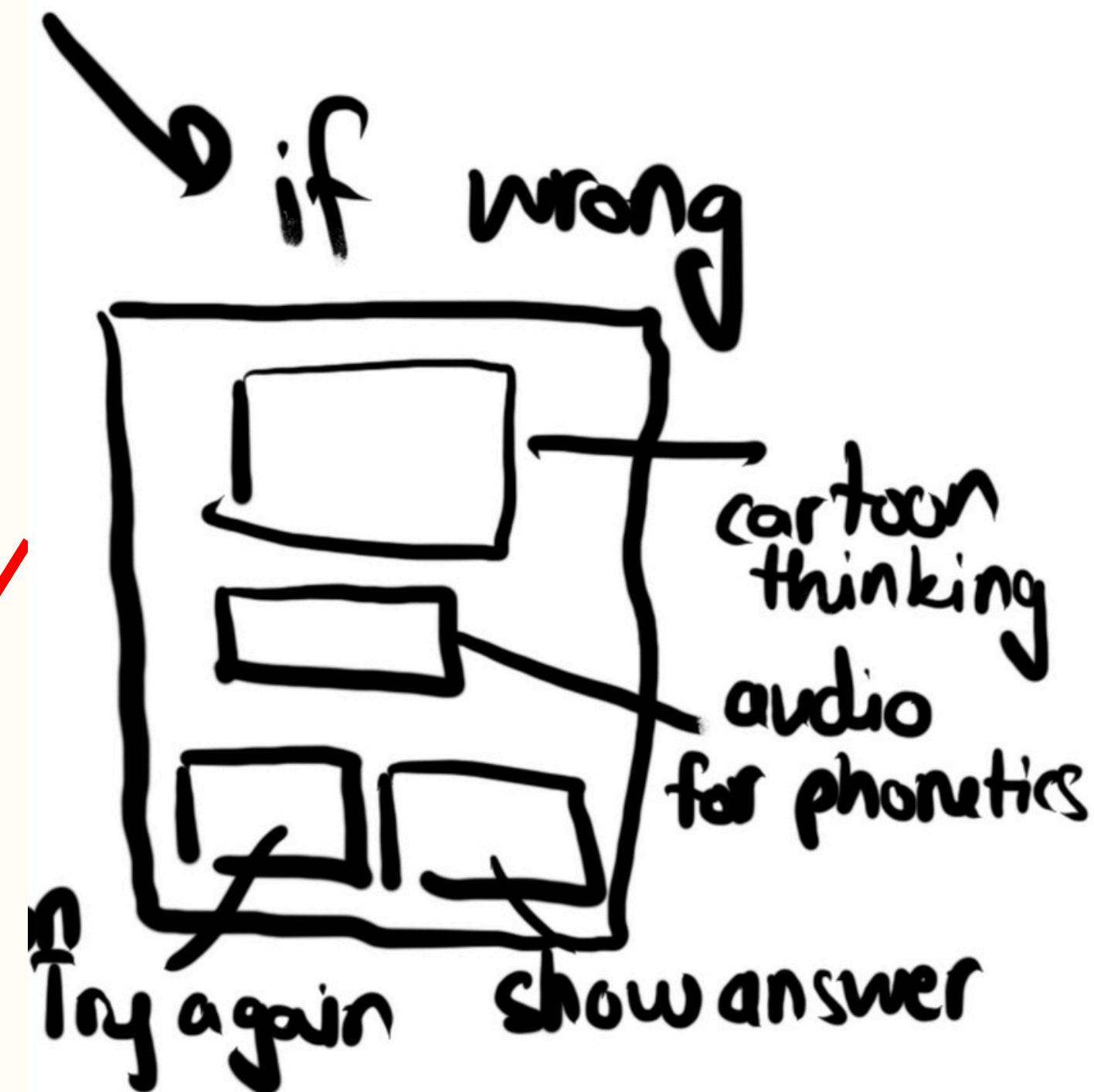
↓ when start button pressed



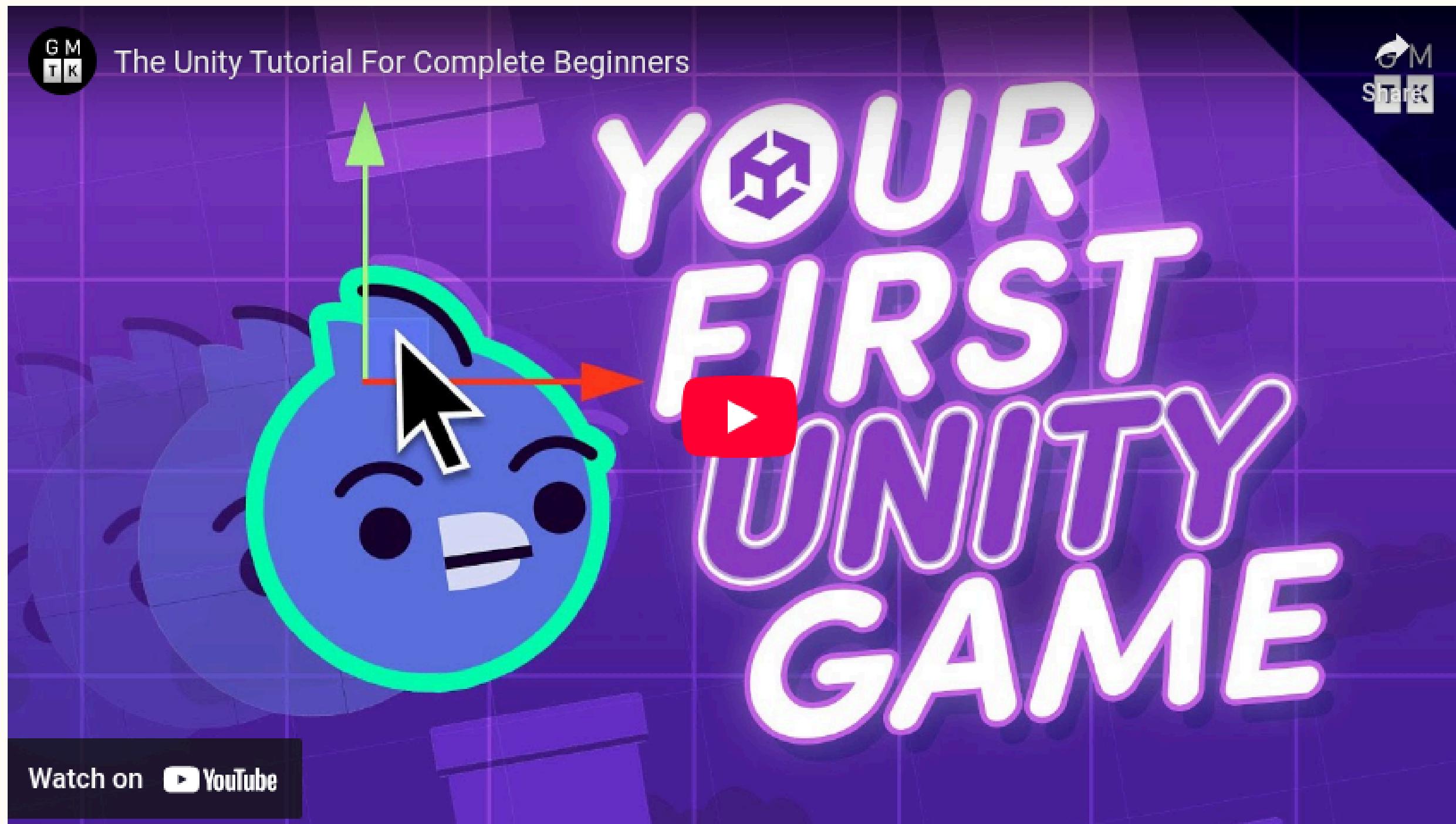
if correct

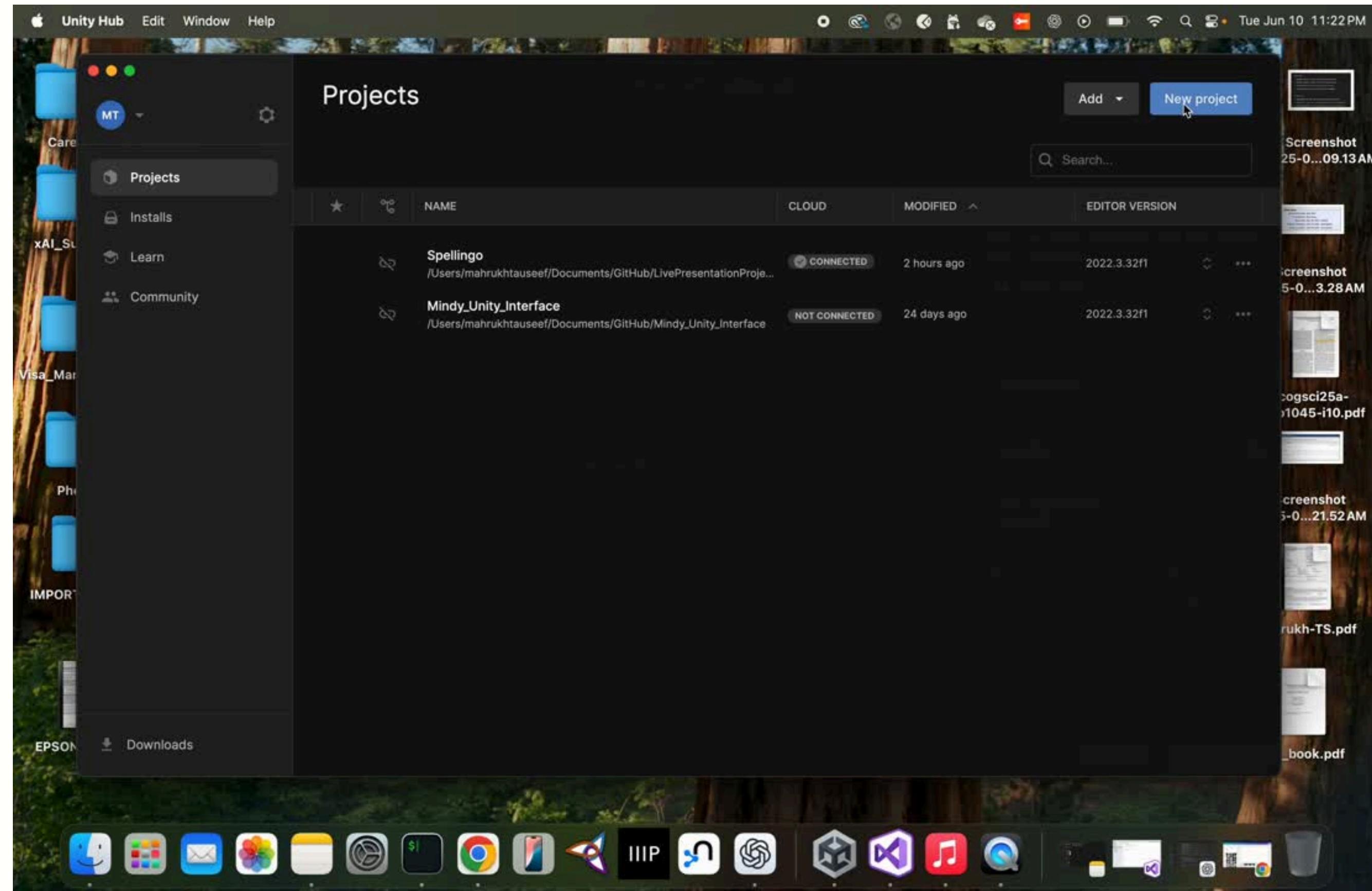


Each grade will have a different list of words based on grade



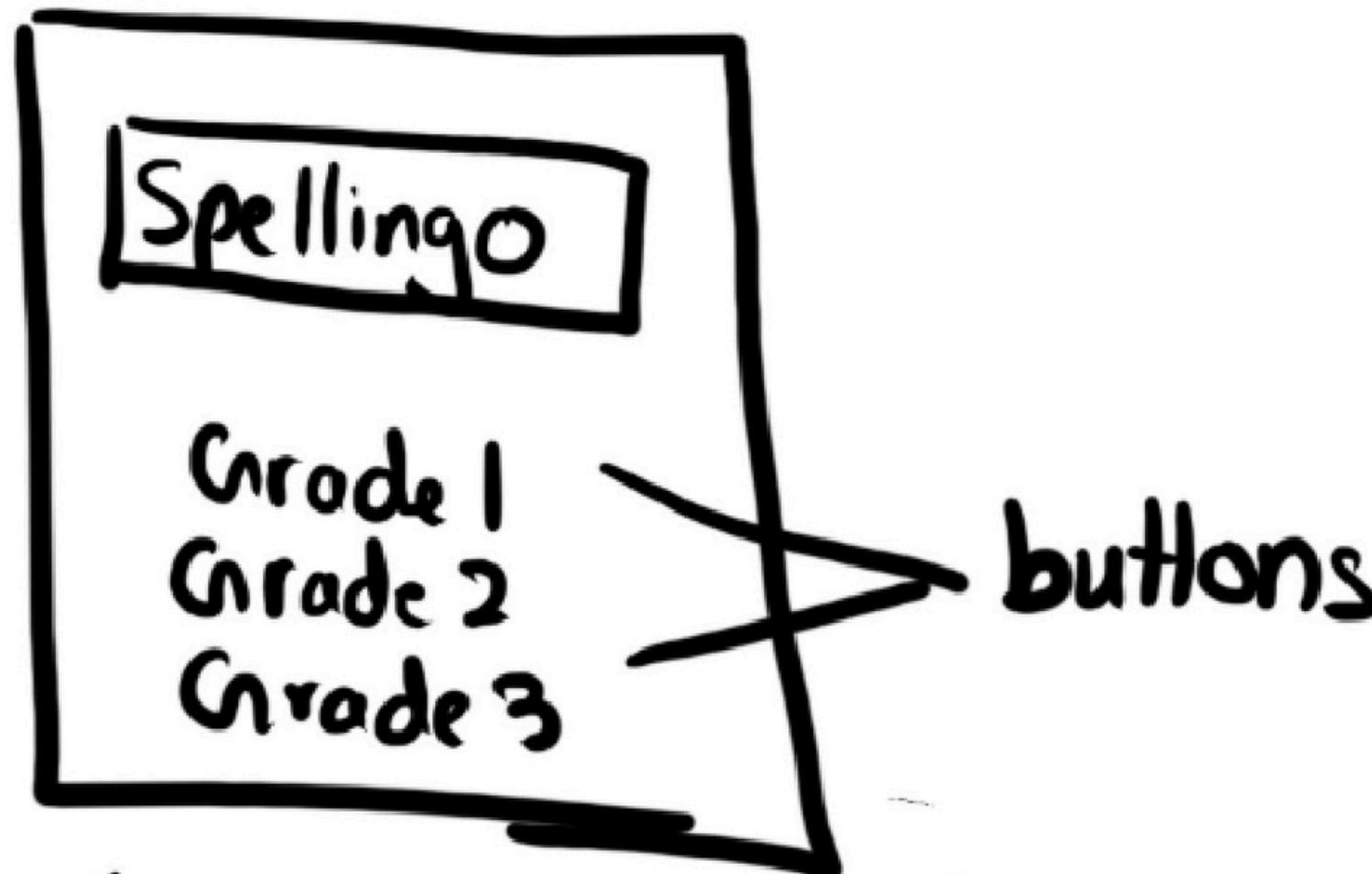
Step 1: Install + Setup Unity





Main Menu

Menu :



To do list:

1. Add a background
2. Add a title
3. Add buttons
4. Add sounds when buttons are pressed

Off to Unity

Resources

Adding background: <https://www.youtube.com/watch?v=DjJUpmjemIs>

All about Canvas: <https://www.youtube.com/watch?v=mNioSjbbeIs>

Adding text (title): <https://www.youtube.com/watch?v=paaBTt5GcMU>

Unity Scripts: <https://www.youtube.com/playlist?list=PLytjVlyAOStpT8xJyijH4uG4nEPexvj18>

Adding Buttons: <https://www.youtube.com/watch?v=gSfdCke3684>

Managing Scenes: <https://youtu.be/E25JWfeCFPA?si=irXHvVB8co04dZhs>

Adding Audio: <https://www.youtube.com/watch?v=iNRI7b9RQpw>

Adding custom fonts: <https://www.youtube.com/watch?v=EV4wFb78FFs>

Downloading sound effects: <https://pixabay.com/sound-effects/>

Downloading new fonts: <https://fonts.google.com/>

Main scripts: Ask ChatGPT to walk you through the following scripts:

- MenuScript: Takes you to the correct scene based on what grade you pick

LET CHATGPT BE YOUR FRIEND!!

Menu :



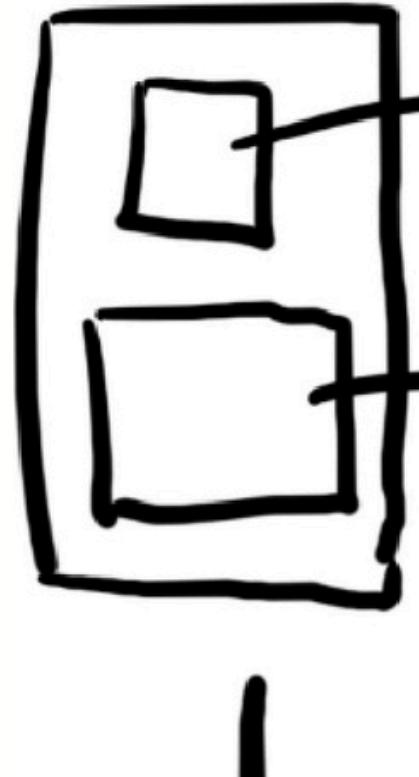
SPELLINGO

GRADE 1

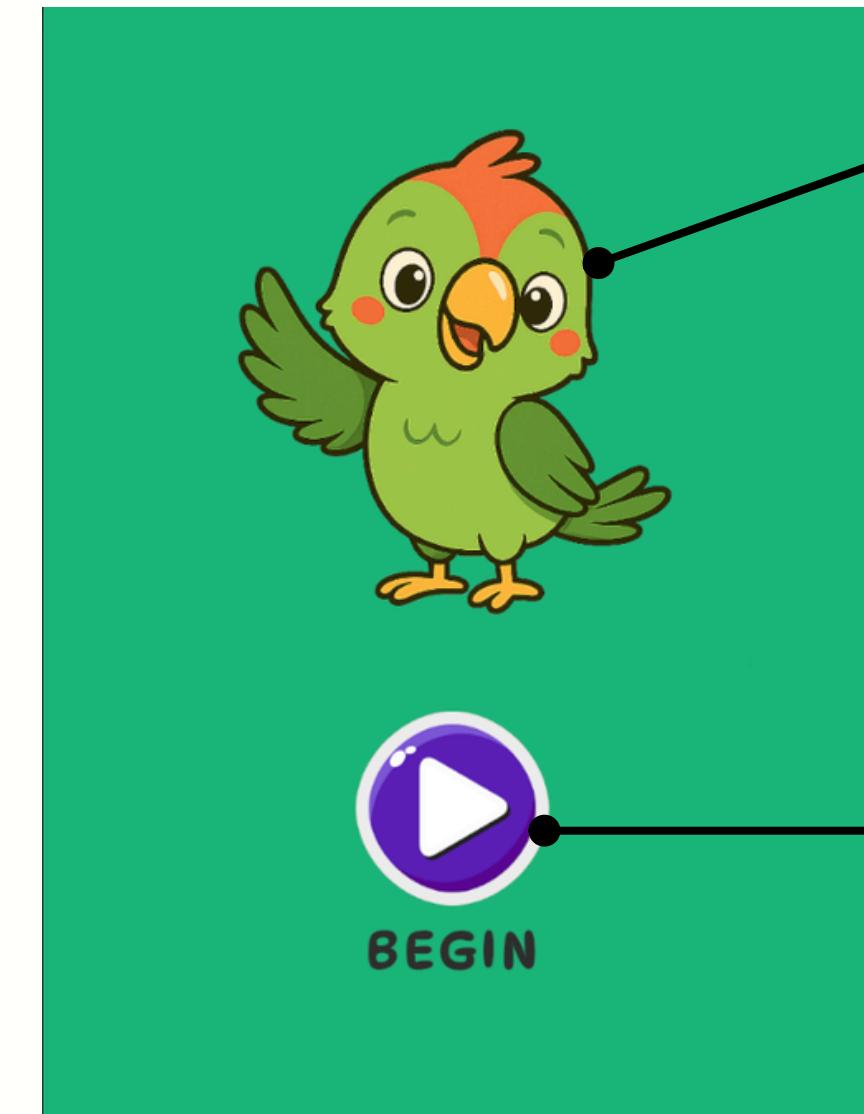
GRADE 2

GRADE 3

✓ Grade 1 clicked (or 2 or 3)



description of
activity & start
button



AI generated!

Same button logic as
before

Audio description, same as before!

Grade1 - Spellingo - Windows, Mac, Linux - Unity 2022.3.32f1 <Metal>

Hierarchy Scene Game Display 1 iPad (768x1024) Scale 0.82x Play Focused

MT Layers Default

Grade1* Main Camera Directional Light Background BirdHello Canvas Start ShowWord ShowAnswer Congratulations TryAgainPowers End EventSystem AudioManager

Rect Transform Anchors Pivot Rotation Scale

Canvas Renderer Cull Transparent Mesh

Image Source Image: WhiteBackground Color: Material: None (Material) Raycast Target: Raycast Padding Maskable: Image Type: Simple Use Sprite Mesh Preserve Aspect Set Native Size

Add Component ShowAnswer

Assets Scenes Grade1 Grade2 Grade3 MainMenu

Background Cartoon Font Resources Scripts Simple Buttons Big Buttons Buttons Style 1 (Round Buttons Style 2 (Square Buttons Style 3 (Round Buttons Style 4 (Square Buttons Style 5 (Round Buttons Style 6 (Square Buttons Style 7 (Round Buttons Style 8 (Square

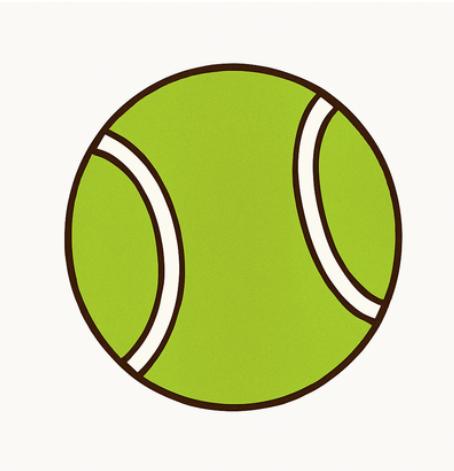
Image Size: 1024x1024

The Unity Editor interface is shown, displaying a scene titled "Grade1". The scene contains a green parrot character and a large purple play button with the word "BEGIN" below it. The "Game" view shows the parrot and the play button. The "Hierarchy" panel lists game objects like Main Camera, Directional Light, Background, and various UI components. The "Inspector" panel shows settings for a UI element named "ShowAnswer", which is a "Rect Transform" component attached to a "Image" object. The "Image" component has its source image set to "WhiteBackground". The "Assets" panel shows scene files like Grade1, Grade2, Grade3, and MainMenu, along with a folder for "Simple Buttons" containing various button styles.

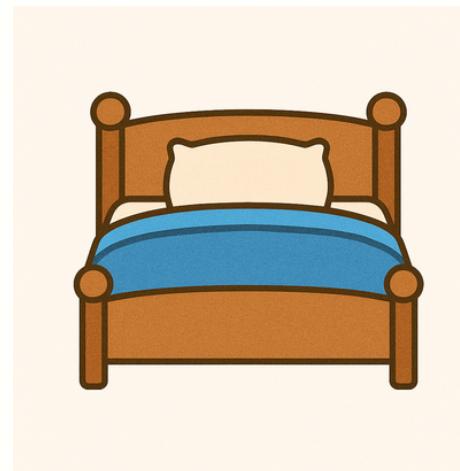
Grade 1 Spelling Material

Picked 9 words from the Fry word list for first graders

ball



bed



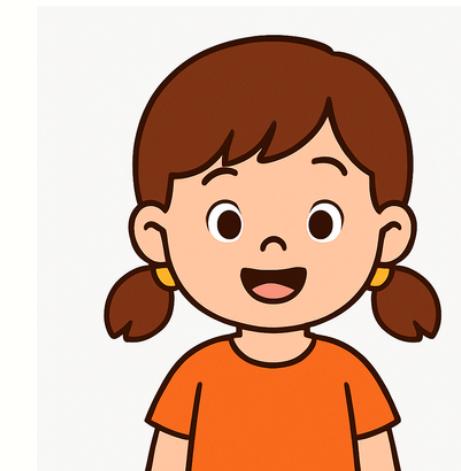
book



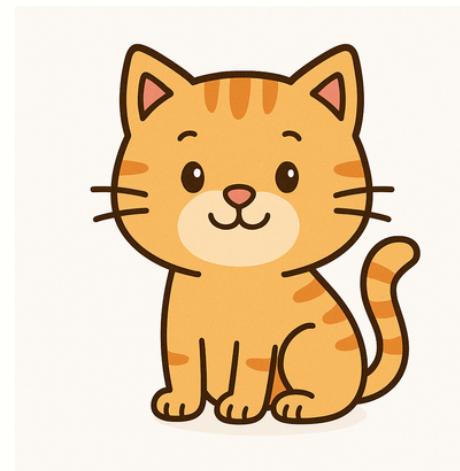
boy



girl



cat



dog



man

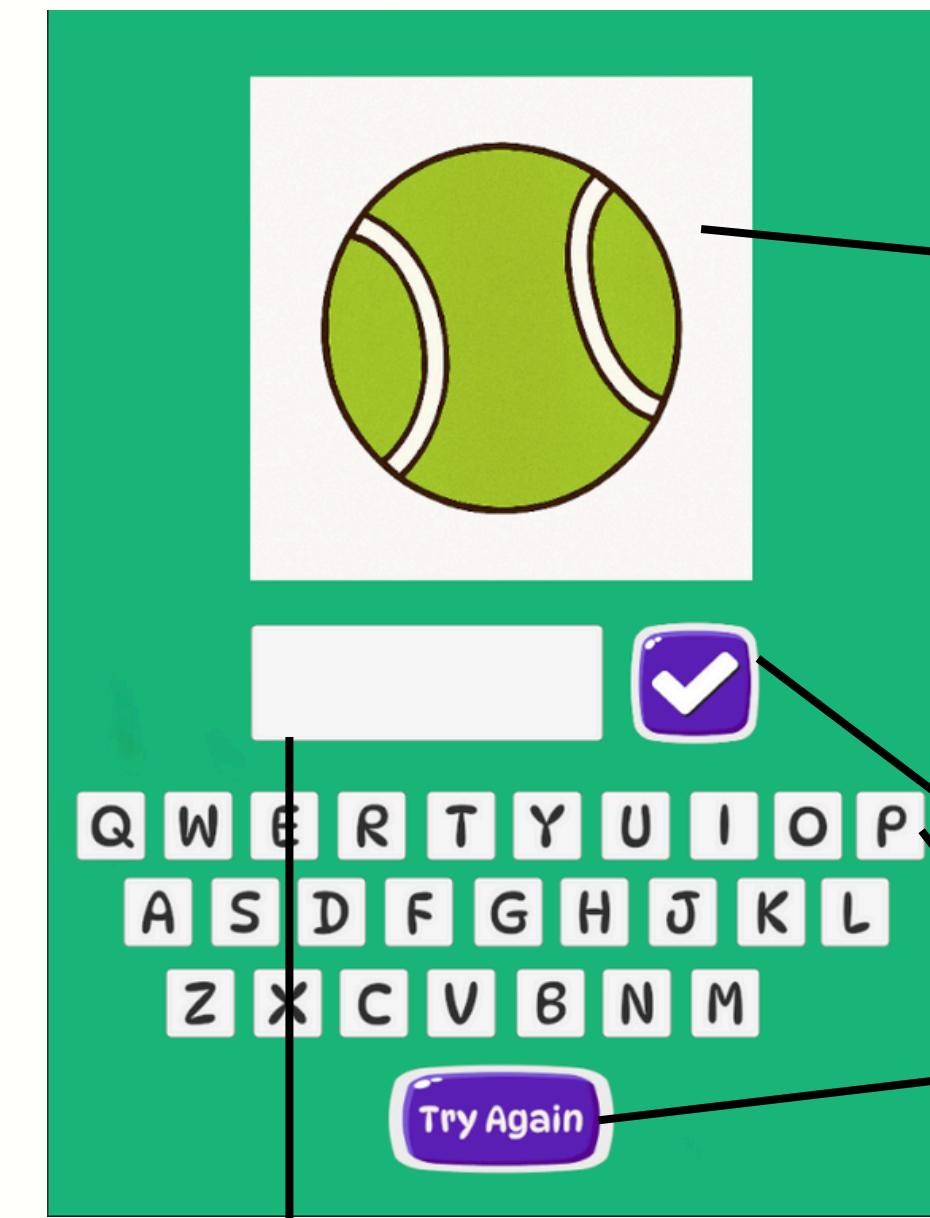
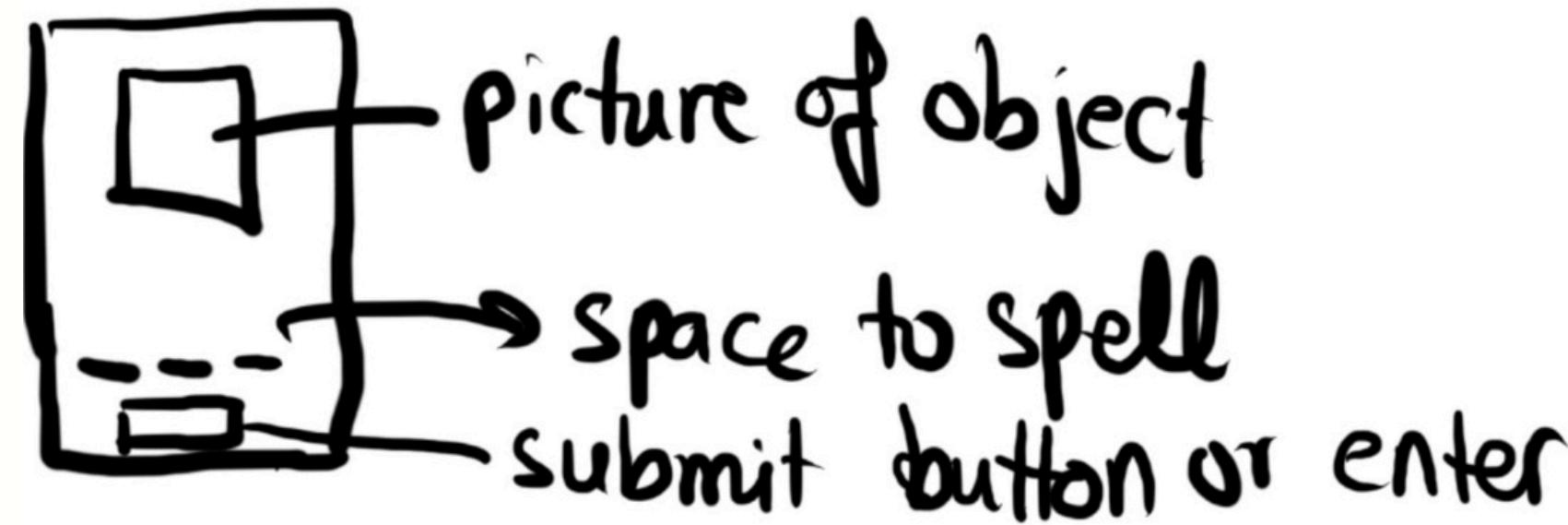


car



Got voiceover pronounciations for all words

↓ when start button pressed

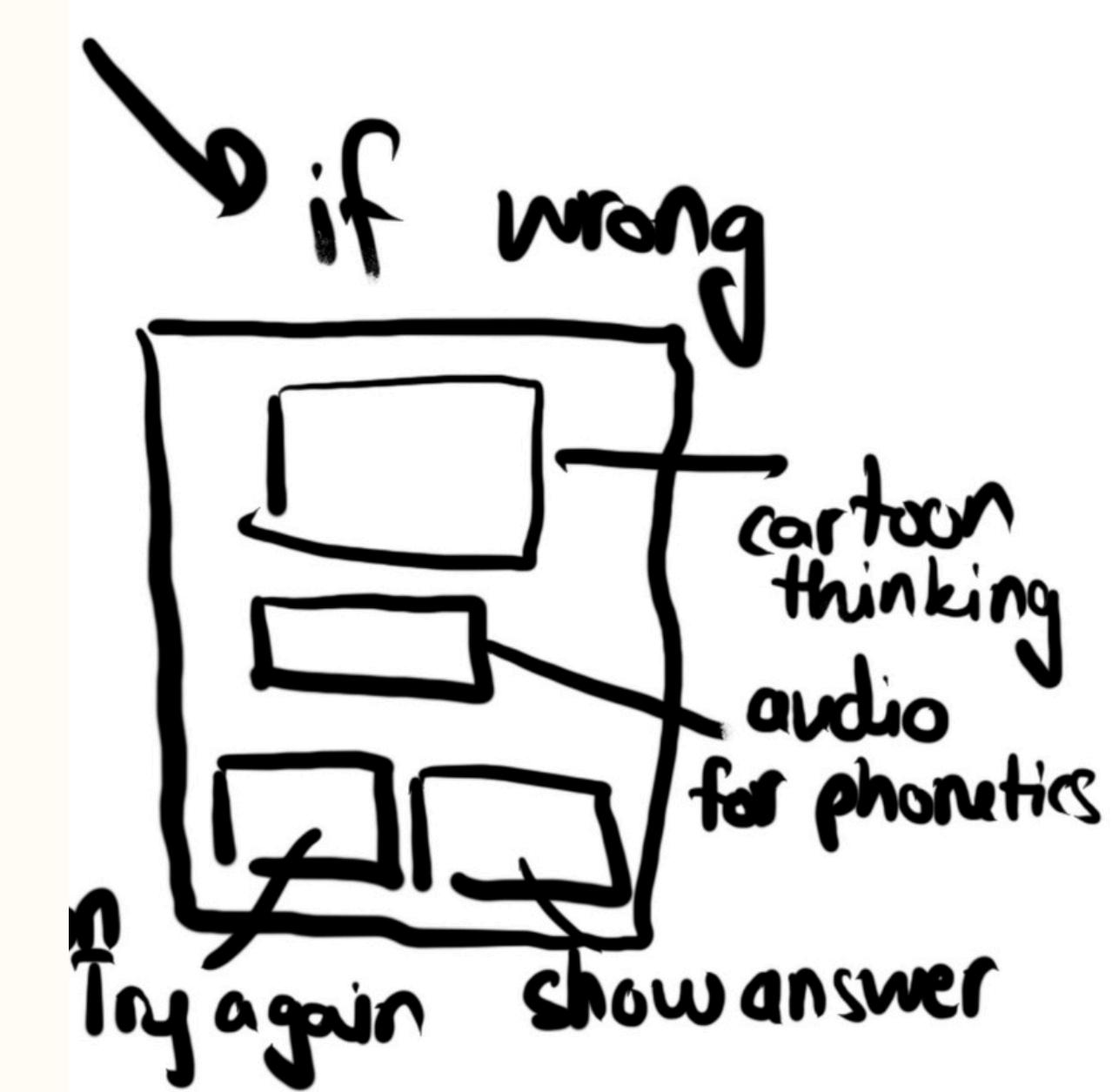
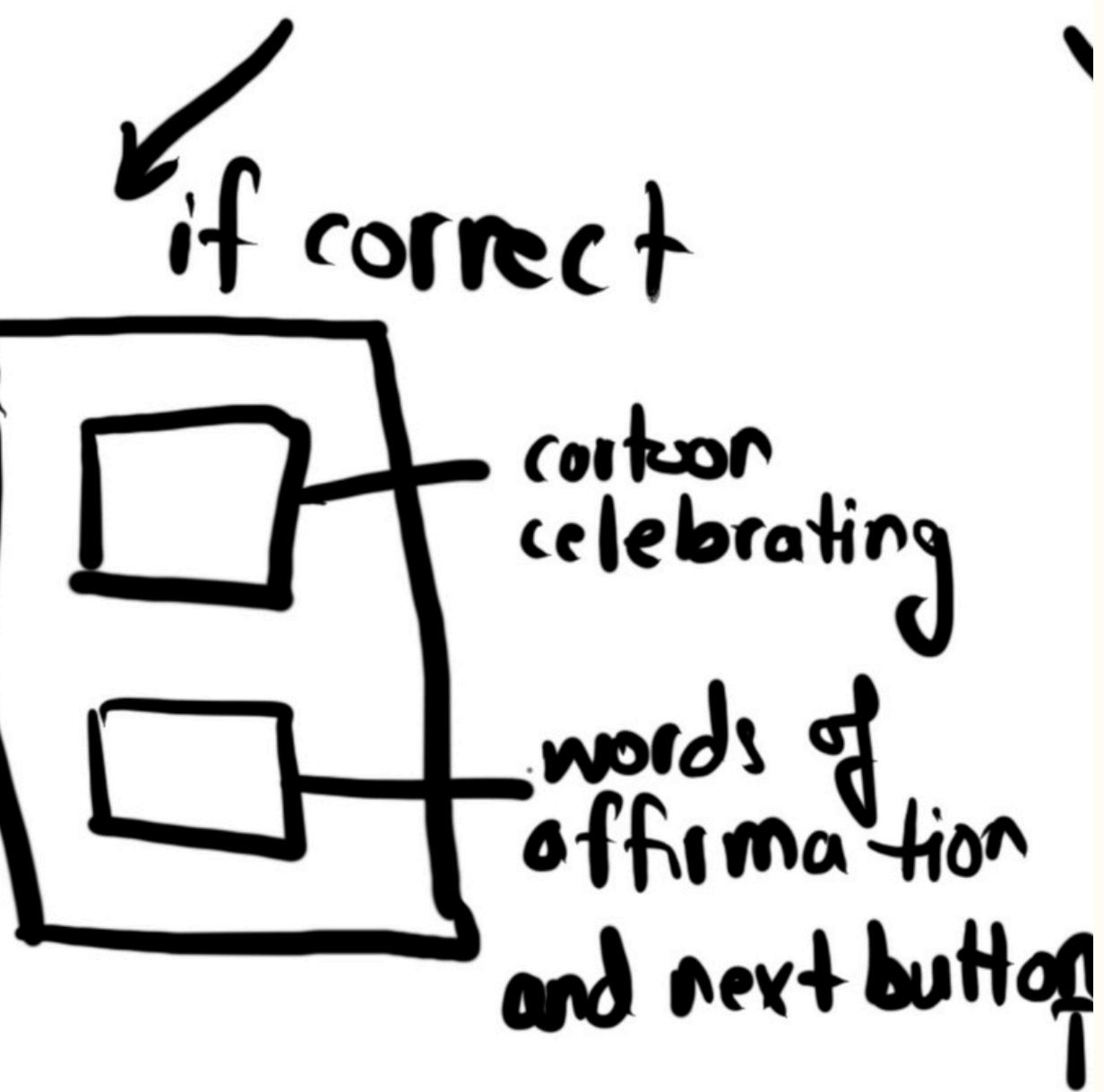
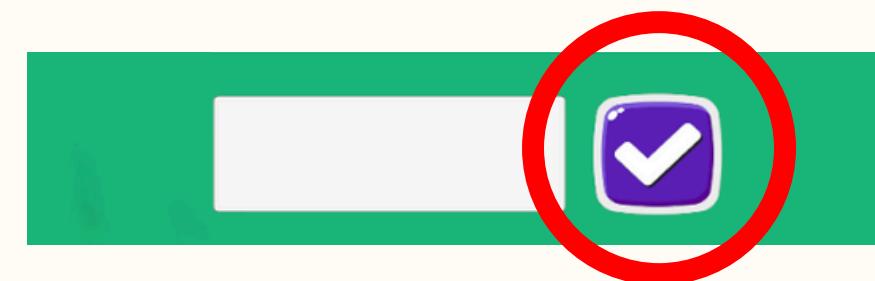


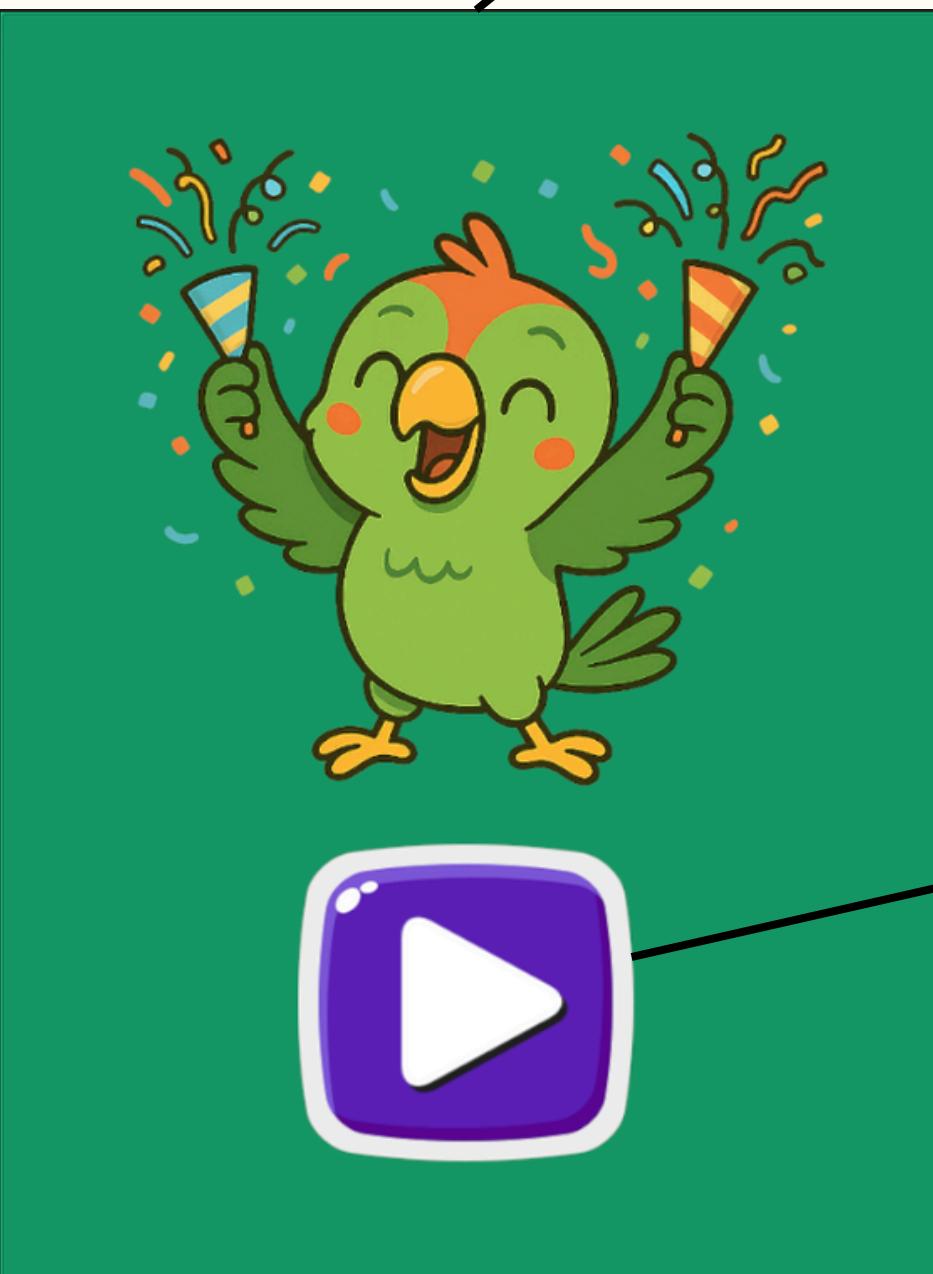
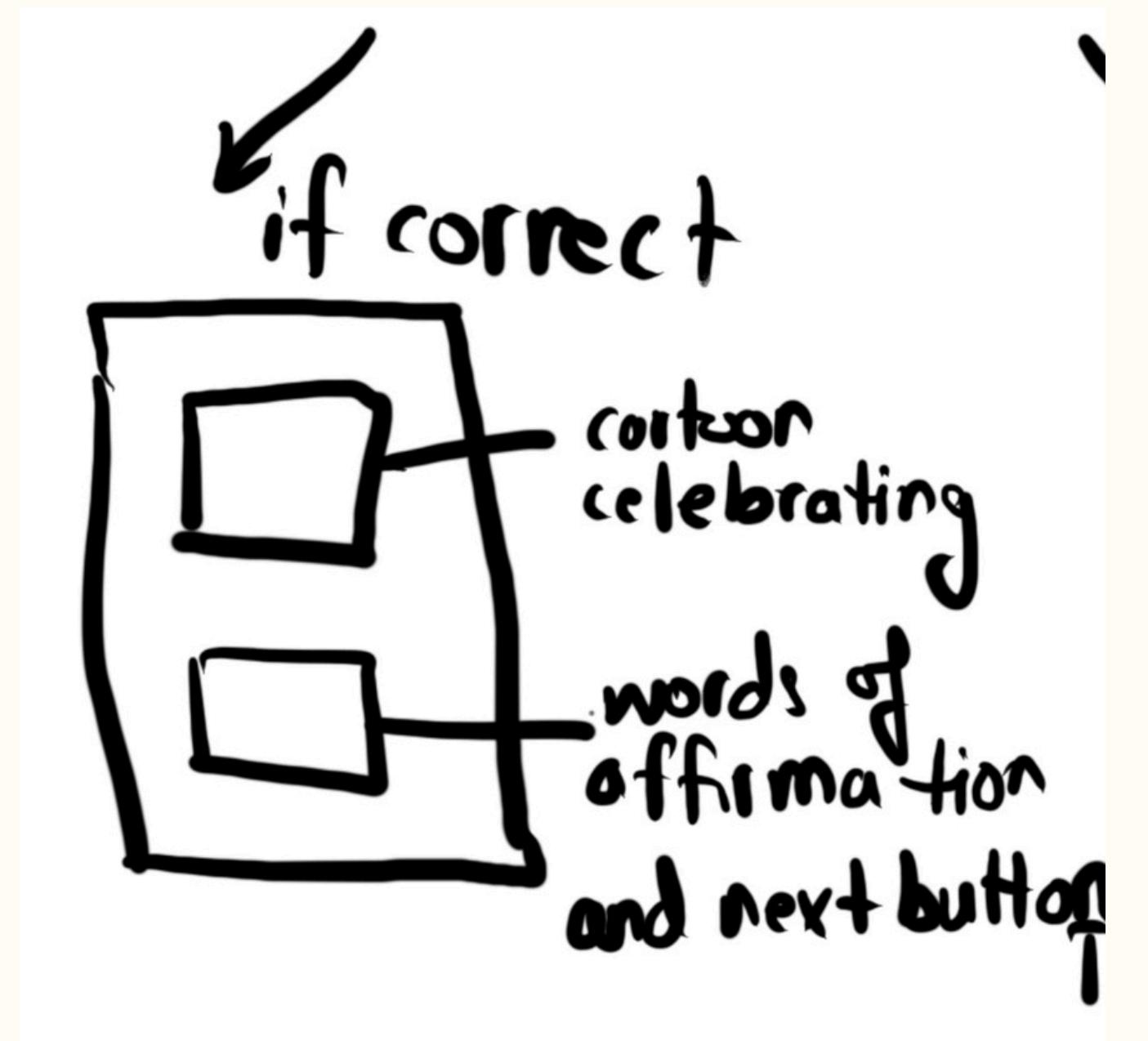
A button with a picture
the plays the audio
pronouncing “ball”

More buttons

Empty space where the
spelling will appear as
you type

Off to Unity





Grade1 - Spellingo - Windows, Mac, Linux - Unity 2022.3.32f1 <Metal>

Hierarchy Scene Game Display.1 iPad (768x1024) Scale 0.82x Play Focused Inspector

Main Camera Directional Light Background BirdHello Canvas Start ShowWord ShowAnswer Congratulations TryAgainFinal EventSystem AudioManager

MT. Center Global EV

Y Z

Q W E R T Y U I O P
A S D F G H J K L
Z X C V & N M

Try Again

using UnityEngine;
using UnityEngine.UI;
using UnityEngine.SceneManagement;

public class MenuScript : MonoBehaviour

[SerializeField] AudioSource buttonpress;
// Start is called before the first frame update

void Start()

// Update is called once per frame

void Update()

public void G1ButtonPressed()

StartCoroutine(PlaySoundAndLoadScene("Grade1"));

private IEnumerator PlaySoundAndLoadScene(string sceneName)

buttonpress.Play();
yield return new WaitForSeconds(buttonpress.clip.length); // Wait for sound to finish

SceneManager.LoadScene(sceneName);

public void G2ButtonPressed()

buttonpress.Play();
SceneManager.LoadScene("Grade2");

public void G3ButtonPressed()

buttonpress.Play();
SceneManager.LoadScene("Grade3");

Asset Labels

Project Console

Assets > Scripts

Assets Scripts

#

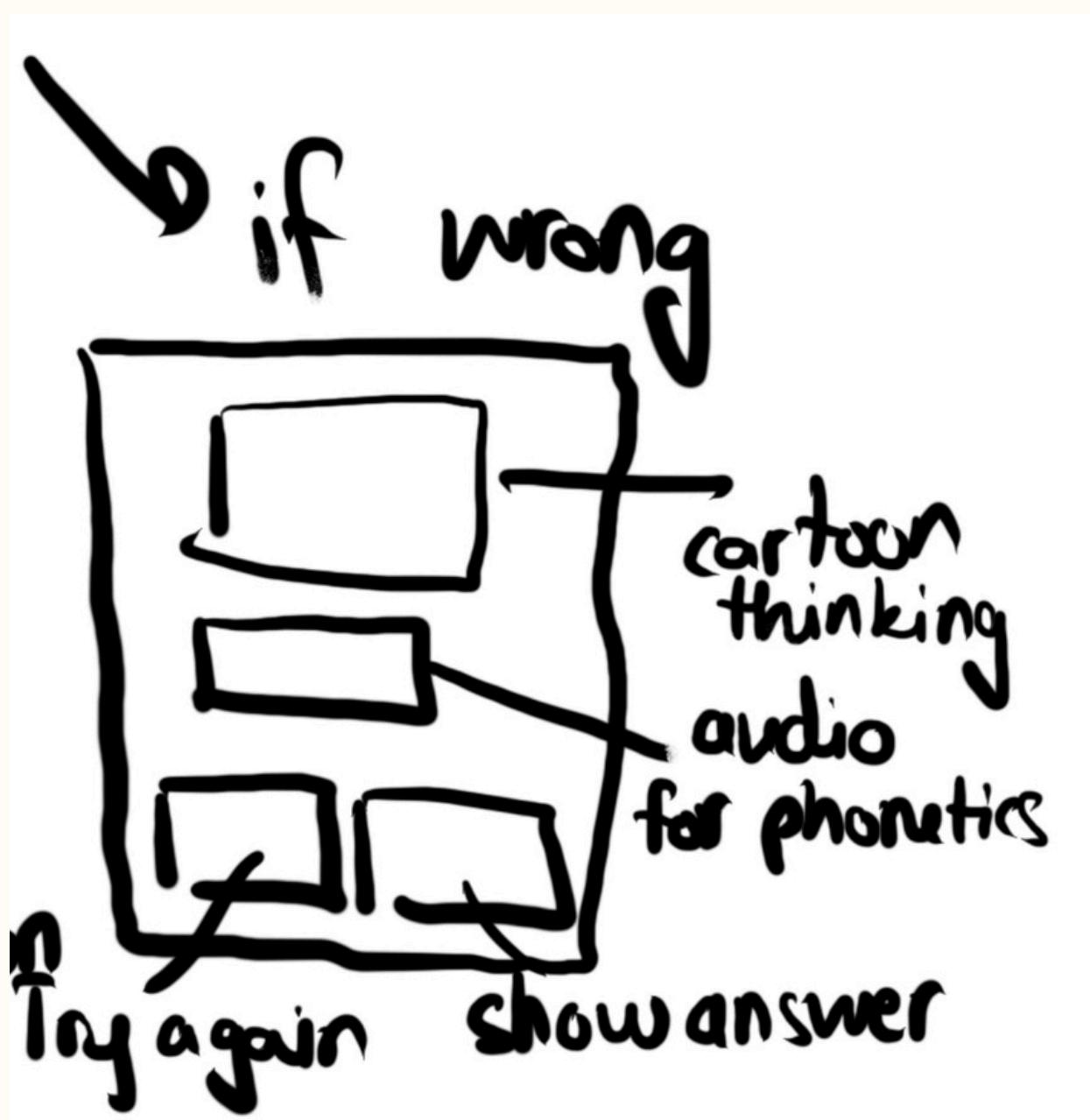
AudioMan... LoadMenu MenuScript TypeLetter WordCaro...

Background Cartoon Font Resources Scenes Scripts Simple Buttons Big Buttons Buttons Style 1 (Round Buttons Style 2 (Square Buttons Style 3 (Round Buttons Style 4 (Square Buttons Style 5 (Round Buttons Style 6 (Square Buttons Style 7 (Round Buttons Style 8 (Square

Assets/Scripts/MenuScripts

IIIP

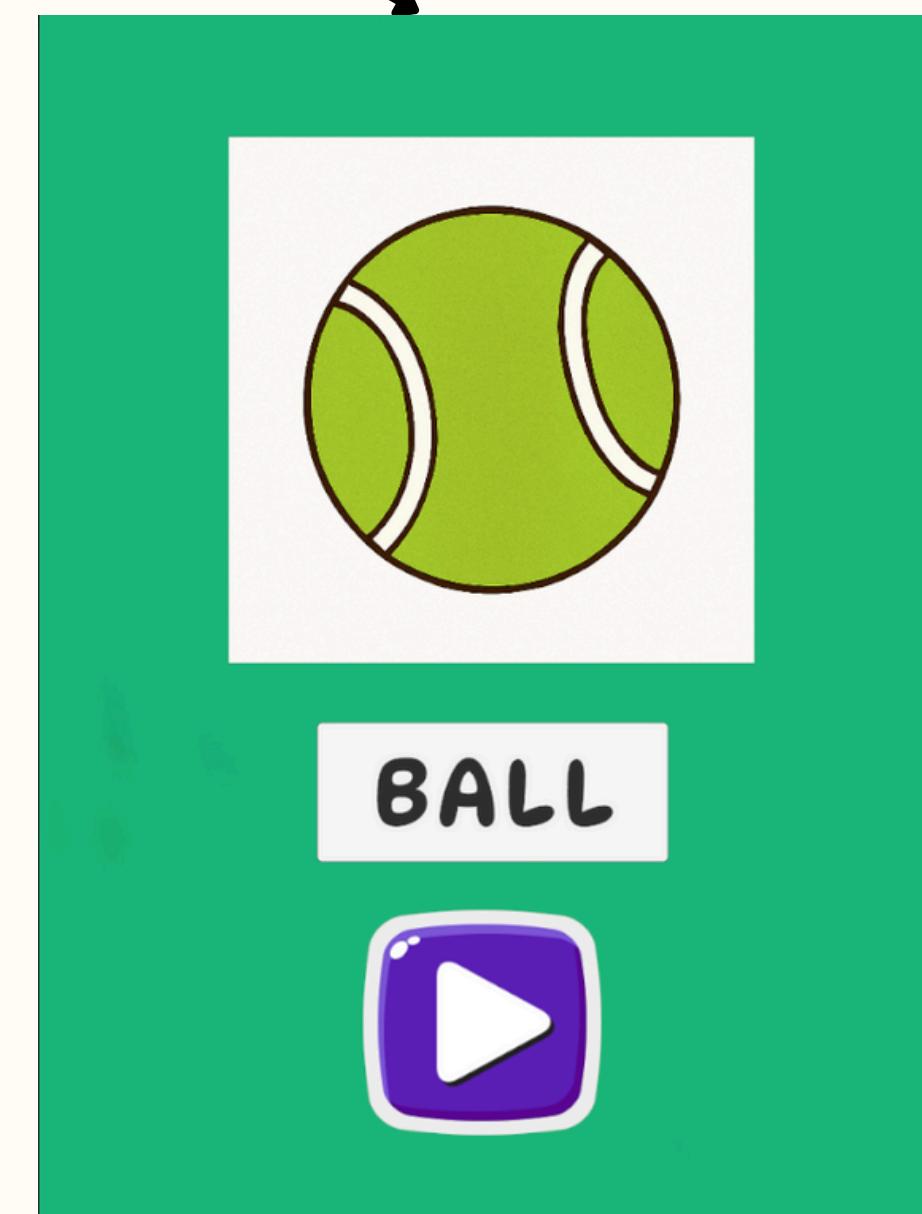
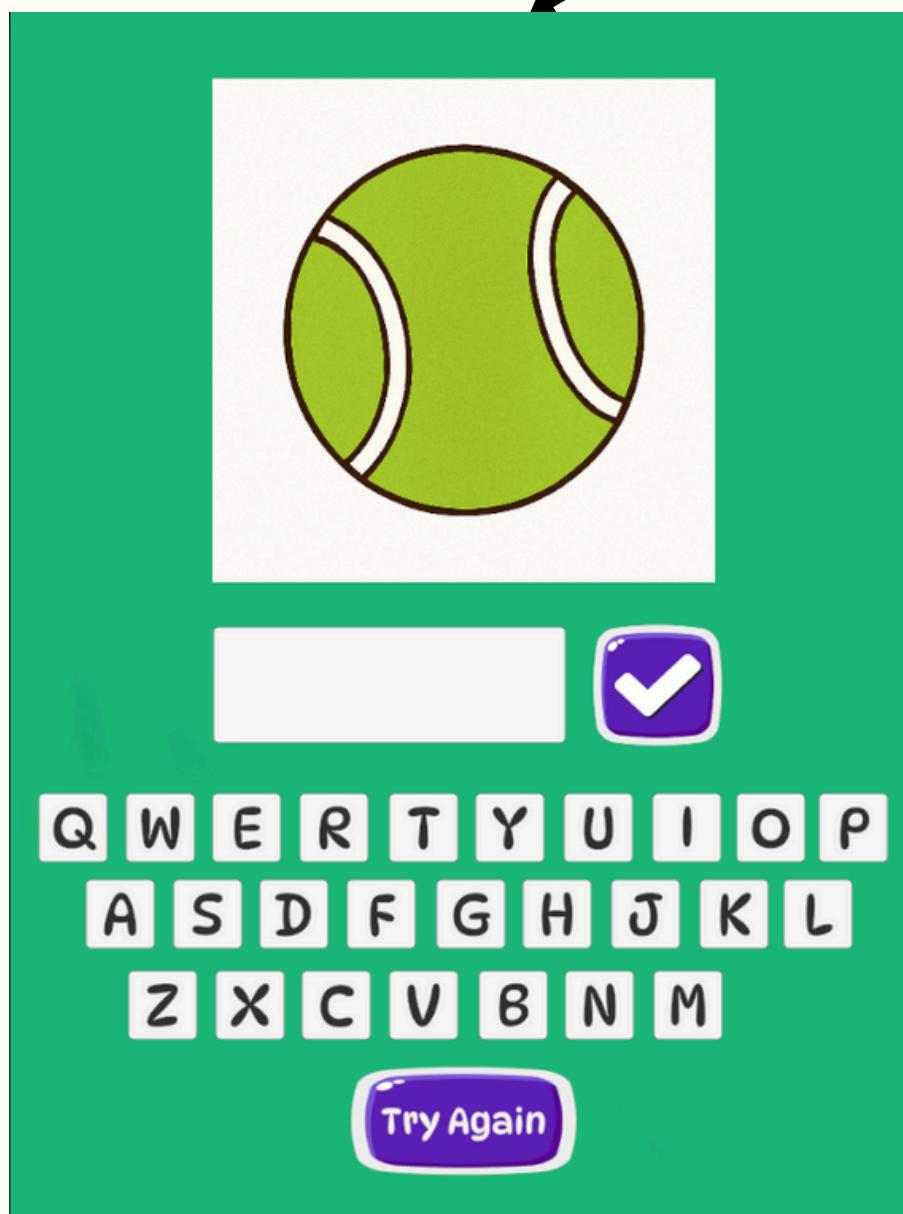
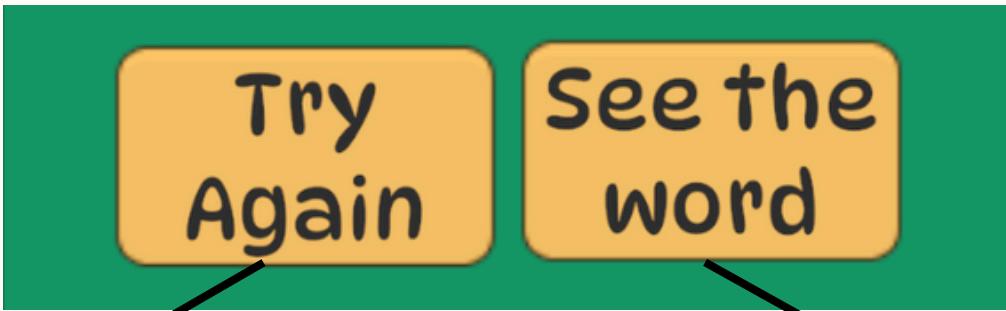
The Unity Editor interface is shown, displaying a game scene titled "Grade1". The scene features a green-themed spelling game interface with a large green tennis ball icon at the top. Below it is a white input field with a purple checkmark icon to its right. A QWERTY keyboard is displayed in the center, with letters Q, W, E, R, T, Y, U, I, O, P, A, S, D, F, G, H, J, K, L, Z, X, C, V, & (purple), and N, M (grey). At the bottom is a purple "Try Again" button. The left side of the screen shows the Hierarchy, Scene, and Game tabs, along with various game objects and scripts. The right side shows the Inspector panel with code for the MenuScript component. The Project and Console tabs are also visible at the bottom.

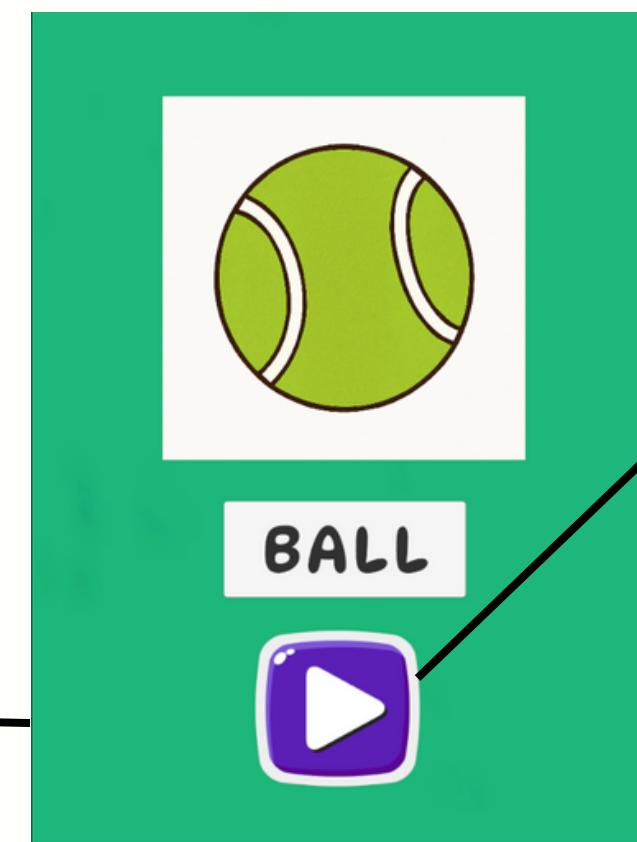
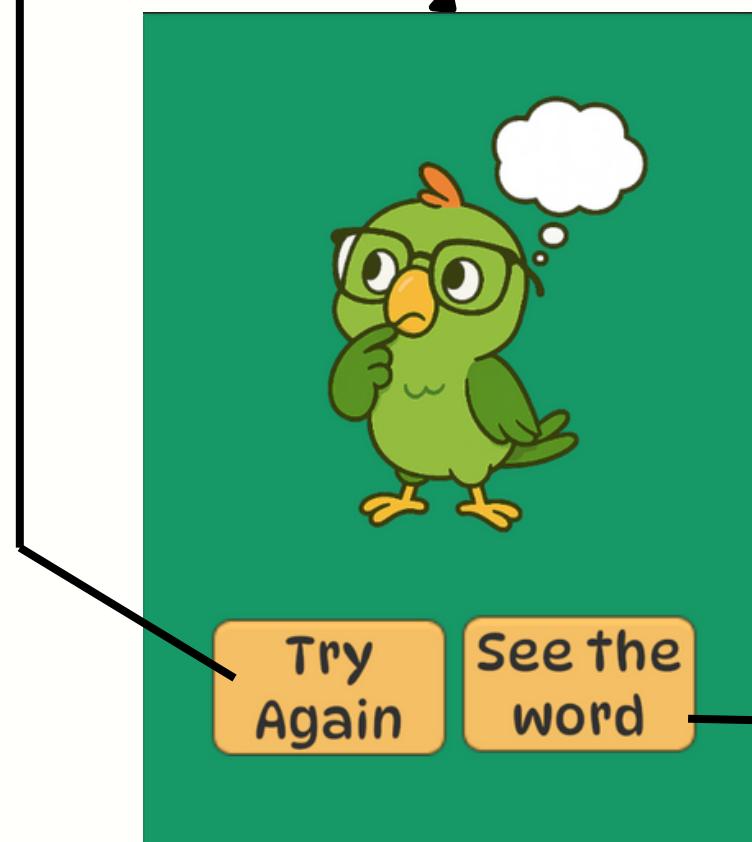
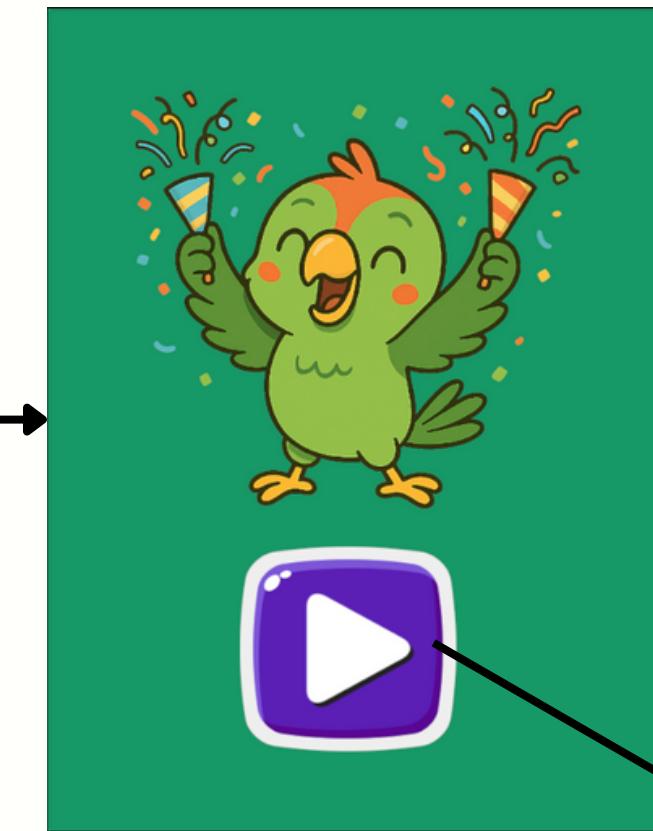
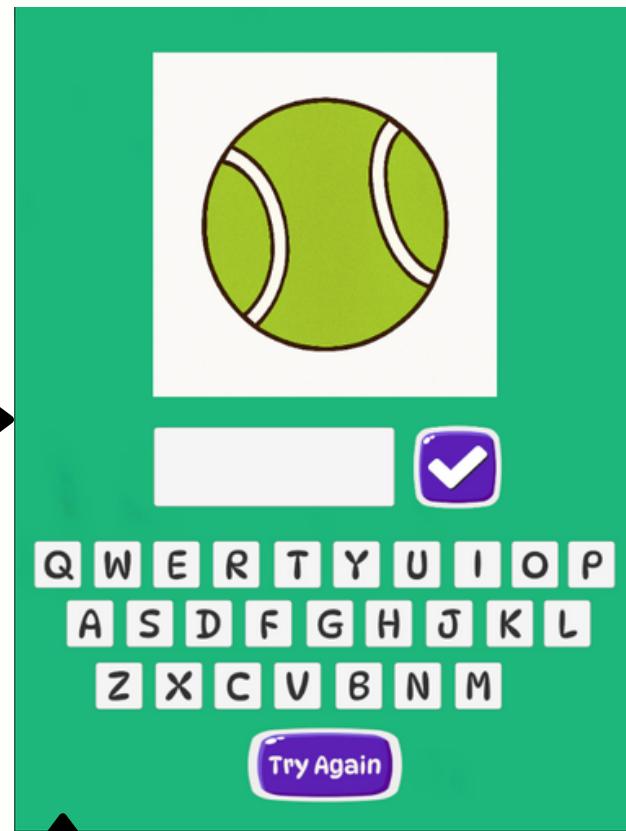
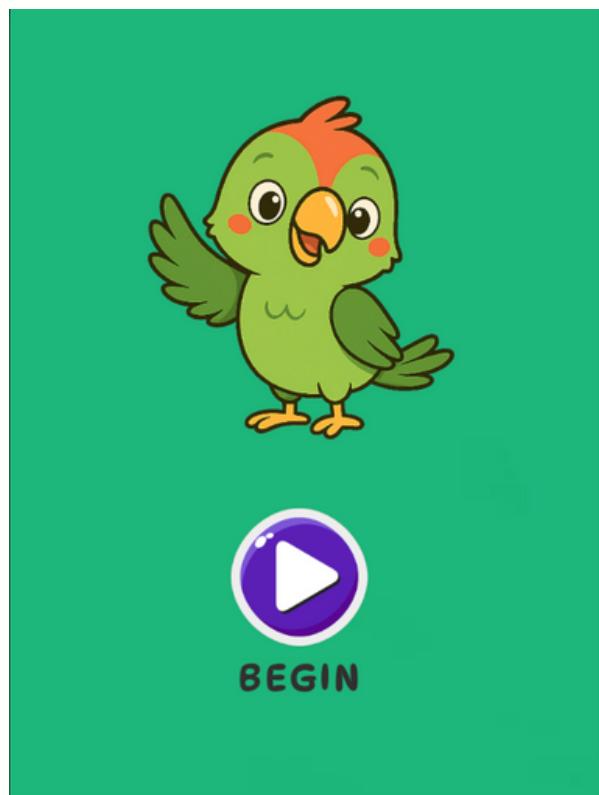


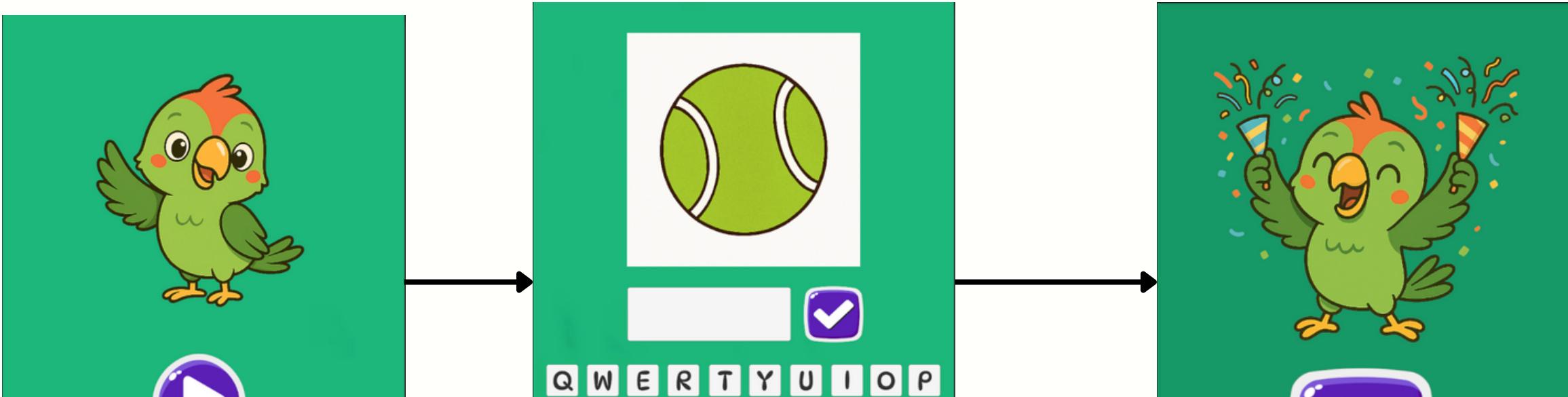
Cartoon image

Audio

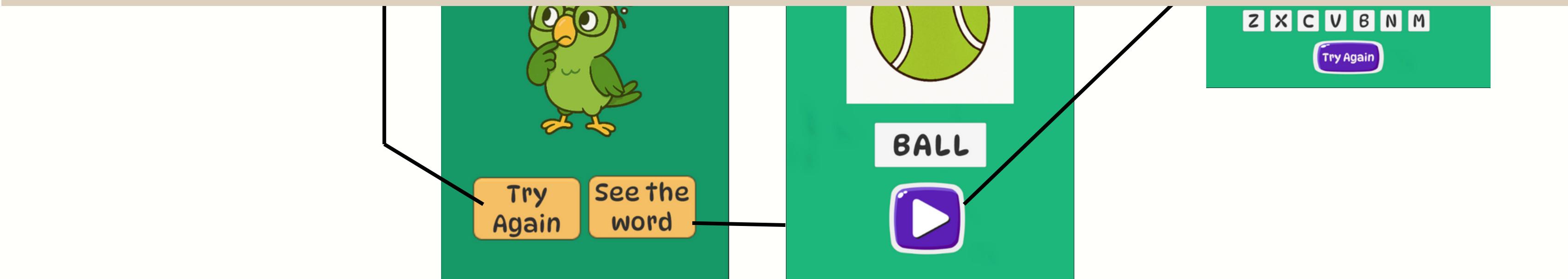
More buttons







PANELS



Resources

Panels: <https://www.youtube.com/watch?v=dZ7wrUV11io>

Main scripts: Ask ChatGPT to walk you through the following scripts:

- WordCarousel: Runs the show inside grade 1
- AudioManager: Controls when to play what sound
- TypeLetter: Types the letter when a key is pressed

LET CHATGPT BE YOUR FRIEND!!

Final Demo

Resources

GitHub: <https://github.com/mahrukhtauseef/LivePresentationProject/tree/main>

My Email: mahrukh.tauseef@vanderbilt.edu

I want you to...

Give it a go!

Reach out if you need help

